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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,222	10/16/2003	Susann Marie Keohane	AUS920030736US1	9463

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EXAMINER
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DAYE, CHELCIE L

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/688,222	<b>Applicant(s)</b> KEOHANE ET AL.	
	<b>Examiner</b> Chelcie Daye	<b>Art Unit</b> 2161	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/17/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This action is issued in response to applicant's amendment filed July 17, 2006.
2. Claims 1-20 are presented. Claims 15-20 added and no claims cancelled.
3. Claims 1-20 are pending.
4. Applicant's arguments filed July 17, 2006, have been fully considered but they are not persuasive.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-5 and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norwood (US Patent No. 5,983,316) filed on May 29, 1997, in view of Maurer (US Patent Application No. 20030065780) filed on September 27, 2002.**

Regarding Claims 1, 8, and 12, Norwood discloses a method of converting characteristics under which a logical volume is stored on a first physical volume group, said method comprising the steps of:

a first processor connected as a server (column 6, lines 57-61, Norwood);

a plurality of client processors connected to said first processor (column 7, lines 27-34, Norwood);

a logical volume stored on a first physical volume group and connected to be accessed from said first processor and said plurality of client processors (column 4, lines 2-9, Norwood), said first physical volume having a first set of fixed characteristics (column 4, lines 22-25, Norwood); and

allocating a second physical volume group (column 4, lines 5-11, Norwood)<sup>1</sup> having desired characteristics for storing said logical volume (column 4, lines 19-24, Norwood). However, Norwood is silent with respect to setting up said second physical volume group as a temporary mirror of said first physical volume group, wherein: reads of said logical volume from an application are directed solely to said first physical volume group; writes to said logical volume from an application are directed to both said first physical volume group and said second physical volume group; and synchronizing said logical volume from said first physical volume group to said second physical volume group. On the other hand, Maurer discloses setting up said second physical volume group as a temporary mirror of said first physical volume group ([0138], lines 4-11, Maurer), wherein: reads of said logical volume from an application are directed solely to said first physical volume group ([0112], lines 1-6, Maurer)<sup>2</sup> and writes to said logical volume from an application are directed to both said first physical volume group and said second physical volume group ([0015], lines 1-13, Maurer); and synchronizing said logical volume from said first physical volume group to said

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<sup>1</sup> Examiner Notes: The step of allocating is represented in Fig. 1, item 75, wherein item 74 is the first physical volume group and 75 is the second physical volume group, and there division represents the groups being allocated. To further elaborate columns 4-5, lines 66-67 and 1-2, Norwood; show the logical volume is allocate and the physical volume is "divided" (i.e. allocation).

second physical volume group ([0055], lines 1-8, Maurer). Norwood and Maurer are analogous art because they are from the same field of endeavor of monitoring status changes of disk storage devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Maurer's teachings into the Norwood system. A skilled artisan would have been motivated to combine as suggested by Maurer at paragraph [0010], lines 1-13, in order to enable extraction of logical information in a non-complex and fast manner, so that a surrogate computer could work with replicated copies in substantially the same manner as the original source computer that operated with the standard data.

Regarding Claims 2,9, and 13, the combination of Norwood in view of Maurer, disclose the method comprising, during said synchronizing step, blocking access by an application to a portion of said logical volume whenever said portion is being synchronized ([0112], lines 7-17, Maurer).

Regarding Claims 3,10, and 14, the combination of Norwood in view of Maurer, disclose the method further comprising, after completion of said synchronizing step ([0112], lines 14-17, Maurer), dropping said temporary mirroring ([0138], lines 6-8, Maurer) and indicating said second physical volume group to be the location of said logical volume ([0116], lines 1-13, Maurer).

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<sup>2</sup> Examiner Notes: "Copy" corresponds to reads.

Regarding Claim 4, the combination of Norwood in view of Maurer, disclose the method wherein at least one of said first physical volume group and said second physical volume group comprise a plurality of physical volumes (column 4, lines 5-11, Norwood).

Regarding Claims 5 and 11, the combination of Norwood in view of Maurer, disclose the method wherein at least one of said first physical volume group and said second physical volume group is striped ([0122], lines 1-11, Maurer).

Regarding Claim 7, the combination of Norwood in view of Maurer, disclose the method wherein both said first physical volume group and said second physical volume group are striped ([0122], lines 1-11, Maurer) and a stripe characteristic is changed during said conversion ([0138], lines 8-13, Maurer).

Regarding Claim 15, the combination of Norwood in view of Maurer, disclose the method further comprising:

converting a first set of characteristics of the first physical volume group to a second set of characteristics of the second volume group, wherein the first set

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of characteristics are different from the second set of characteristics ([0138], Maurer).

Regarding Claim 16, the combination of Norwood in view of Maurer, disclose the method wherein the first set of characteristics and the second set of characteristics are striping characteristics ([0138], Maurer).

Regarding Claim 17, the combination of Norwood in view of Maurer, disclose the method wherein the synchronizing step occurs once the second physical volume group is formatted to have the desired characteristics ([0144], Maurer).

Regarding Claim 18, the combination of Norwood in view of Maurer, disclose the method wherein the logical volume remains online for applications and users accessing the logical volume during the allocating, setting up, and synchronizing steps ([0060], Maurer).

Regarding Claim 19, the combination of Norwood in view of Maurer, disclose the method further comprising:

creating a temporary logical volume entry point representing first physical volume characteristics and a temporary hidden entry point that represents second physical volume characteristics ([0138], Maurer).

Regarding Claim 20, the combination of Norwood in view of Maurer, disclose the method further comprising:

modifying the logical volume to use the second physical volume group ([0112], Maurer); and delete the first physical volume group ([0142], Maurer).

**7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norwood (US Patent No. 5,983,316) filed on May 29, 1997, in view of Maurer (US Patent Application No. 20030065780) filed on September 27, 2002, as applied to claims 1-5 and 7-14 above, and further in view of Ripberger (US Patent No. 5,502,811) filed on September 29, 1993.**

Regarding Claim 6, the combination of Norwood in view of Maurer, is silent with respect to disclosing the method wherein at least one of said physical volume groups are not striped. However, Ripberger discloses at least one of said physical volume groups are not striped (column 7, lines 32-49, Ripberger)<sup>3</sup>.

Norwood in view of Maurer and further in view of Ripberger are analogous art because they are from the same field of endeavor of managing data on removable media volumes to support array operation. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Ripberger's teachings into the Norwood in view of Maurer system. A



skilled artisan would have been motivated to combine in order to store all data of one object on one media unit until the free space of the media unit is consumed.

### ***Response to Arguments***

*Applicant argues, Norwood and Maurer fail to disclose, "reads of said logical volume from an application are directed solely to said first physical volume group".*

Examiner respectfully disagrees. As stated in the action above, Maurer discloses at [0112], lines 1-6, wherein the first logical unit is replicated to create a copy (i.e. a mirrored BCV). The step of 'replicating to create a copy' represented the first logical unit being read. In accordance with the online dictionary the term read means, to copy from one form of storage to another. Applicant argues the read operation within the present application is "performed by a read/write head by sensing the polarity of the magnetized zones" and the copy within the Maurer reference is "a synchronized read and write operation to copy a specified portion of a logical volume". However, the terminology used to distinguish the 'read' operation within the present invention is not found within the claim language and is therefore given its broadest reasonable interpretation. Also, applicant states "Maurer does mention read operations but does not teach the language of claim 1". Applicant is informed that while the exact terminology is not used throughout the reference, only the functionality of the claim language is needed for a proper rejection not the specific language. Lastly, to address applicants concerns that "there is no language indicating where read operations are directed". Since the first logical unit is

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<sup>3</sup> Examiner Notes: "Unstriping" means to take away the stripes, which corresponds to the volume not

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replicated to create a copy, in order to create a copy it is known that the information must be read and then the information can be written to another storage (i.e. mirrored). As a result of the creation of the mirror the information can only come from the first logical unit.

*Applicant argues no suggestion is present in Norwood or Maurer references, in order to modify the references to include certain features.*

Examiner respectfully disagrees. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the suggestion to combine was found within Maurer at [0010], lines 1-13; in order to enable extraction of logical information in a non-complex and fast manner, so that a surrogate computer could work with replicated copies in substantially the same manner as the original source computer that operated with the standard data. Also, since both references deal with managing volume of a storage system the motivation to combine is there.

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being striped.

*Applicant argues neither references address a need to allow a logical volume to be converted to a different format while remaining online for use by applications even as the logical volume is being converted.*

Examiner respectfully disagrees. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., allow a logical volume to be converted to a different format while remaining online for use by applications even as the logical volume is being converted) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

*Applicant argues, in regards to claims 8 and 12, Norwood and Maurer do not teach, "the first physical volume having a first set of fixed characteristics and that the second physical volume group has a second set of fixed characteristics that are different from the first set of fixed characteristics".*

Examiner respectfully disagrees. As stated in the action, Norwood discloses at column 4, lines 2-29; wherein a logical volume monitor manages logical volume groups and wherein disk storage elements 80-84 are one physical volume group and disk storage elements 85-89 are a second physical volume group. The two physical volume groups are the representations for a first and a second physical volume. Also, Maurer discloses at [0138]; wherein a first volume (RAID 0) which standard unit is a stripeset

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creates a second volume of temporary striped mirrorset (RAID 0+1 or RAID 1) for replication. Therefore demonstrating that a second volume (striped mirrorset – RAID 1) has different fixed characteristics than that of the first volume (stripeset – RAID 0). As a result, Norwood and Maurer do disclose the limitation of the first physical volume having a first set of fixed characteristics and that the second physical volume group has a second set of fixed characteristics that are different from the first set of fixed characteristics.

*Applicant argues, Maurer does not disclose “blocking access by an application to a portion of the logical volume during synchronization”.*

Examiner respectfully disagrees. As stated in the action above, Maurer discloses at [0112], lines 7-17, wherein when the first logical unit is no longer accessible (i.e. blocked) the system provides access to the copy. If desired, the system can perform a restore while providing mirror synchronization. The phrase ‘no longer accessible’ shows that there is no access into the first logical unit, therefore corresponding to the blocking of the access. Lastly, the first logical unit corresponds to the portion of the logical volume during synchronization. For further clarification Maurer discloses at [0115], where mirror synchronization occurs and writes are no longer made to the second logical unit due to a split.

*Applicant argues, Ripberger does not disclose "a volume that is not striped", and also that "a process for unstriping a volume and an unstriped volume are distinguishable".*

Examiner respectfully disagrees. As stated in the action above, Ripberger discloses at column 7, lines 32-49; wherein after the volumes are read unstriping is performed if it is determined that all the header labels are as expected. The term unstriping means to take away the stripes, resulting in the volumes not being striped. Therefore, Ripberger does disclose a volume that is not striped. Also, applicant argues that a process for unstriping a volume is distinguishable from an unstriped volume. Applicant did not give any reasoning for this particular statement, however examiner notes the only difference between the two is that, one volume is already without stripes and the other volume is in the process of being without stripes. Therefore resulting in the same outcome.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

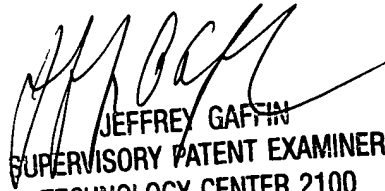
***Points of Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chelcie Daye whose telephone number is 571-272-3891. The examiner can normally be reached on M-F, 7:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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October 6, 2006

  
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